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S/048/60/024/009/009/015  
B0:3/B063

24.6720  
AUTHORS:

Surkov, Yu. A., Chernov, G. M., Lavrukhina, A. K.,  
~~Khrumonenkov, B. V.~~

TITLE:

Investigation of Neutron-deficient Osmium Isotopes *A*

PERIODICAL:

Izvestiya Akademii nauk SSSR. Seriya fizicheskaya, 1960,  
Vol. 24, No. 9, pp. 1119-1123

TEXT: The present paper gives the results of an investigation of neutron-deficient osmium isotopes on the synchrocyclotron of OIYaI (Joint Institute of Nuclear Research). The osmium isotopes were produced by bombarding ~0.2 g of gold with 660-Mev protons for 1—2 hours. The purity of the separated elements was radiochemically checked. A 100-channel scintillation gamma spectrometer and  $\beta$ - and  $\gamma$ -counters were used to analyze the beta and gamma emission of the nuclear reaction products. Fig. 1 shows the gamma spectrum of the osmium isotopes obtained. The authors identified  $Os^{182}$ ,  $Os^{183}$ ,  $Os^{183*}$ , and  $Os^{185}$  which had a half-life of at least 10 hours. In addition, the spectrum showed an intense line,  $E_{\gamma} = 230$  kev, which had

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Investigation of Neutron-deficient Osmium  
Isotopes

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B013/B063

a half-life of  $\sim 2.7$  hours. Control experiments indicated the existence of a new osmium isotope having a half-life of three hours. This was confirmed by the study of the daughter osmium (Figs. 3 and 4) and the daughter rhenium (Fig. 5). This neutron-deficient isotope is assumed to be  $\text{Os}^{181}$  and has a half-life 2.7 hours. By capture of the orbital electron it is

converted into  $\text{Re}^{181}$ . 230-keV gamma quanta are emitted during this conversion. Fig. 2 shows the descending curve of the activity sum of Os, which was measured by an end-window counter. It confirms the correctness of the identification of the isotopes. As there are now only few data available on neutron-deficient Ir, Os, and Re isotopes, the conclusions drawn from the results obtained require further confirmation. The agreement of these results with experiments recently carried out with protons of 10 - 80 MeV (Ref. 1) indicates that the above-mentioned identification is correct. The results further indicate the existence of the isotope  $\text{Ir}^{183/18}$  which is formed by the decay of the two isomers  $\text{Os}^{183}$  and  $\text{Os}^{183*}$ . Furthermore, a 23-min activity of osmium ( $E_\gamma = 170$  keV) was observed

during the experiments. However, the 23-min isotope may well be an isomer

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ALIMARIN, I.P.; YAKOVLEV, Yu.V.; SHCHULEPNIKOV, M.N.; VLASOV, D.A.;  
CHERNOV, G.M.; SURKOV, Yu.A.

Radioactive determination of impurities in high purity  
thallium. Zhur.anal.khim. 16 no.2:213-216 Mr-Apr '61. (MIRA 14:5)

1. Vernadsky Institute of Geochemistry and Analytical Chemistry,  
Academy of Sciences U.S.S.R., Moscow.  
(Thallium—Analysis)

SURKOV, YU.A.

Nuclear Reaction in the Outer Space

Report to be submitted for the 4th International Space Science Symposium  
COSPAR) Warsaw, 2-12 June 63

BARANOV, V.I.; BARSUKOV, V.L.; IVANOVA, V.F.; KERISTIANOV, V.K.;  
SUKKOV, Yu.A., kand. fiz.-matem. nauk, otv. red.

[Neutron methods of research and analysis of boron-  
containing raw materials] Neitronnye metody poiskov i  
analiza bornogo syr'ia. [by V.I. Baranov i dr.] Moskva,  
Izd-vo "Nauka," 1964. 139 p. (MIRA 18:1)

YANUSHKAYA, T.S.; GULIKOVA, G.V.; SURKOV, Yu.A.

Amplitude curves of P waves. Vop.din.teor.raspr.seism.voln no.7:104-  
114 '64. (MIRA 17:12)

L 04702-67 FSS-2/EWT(1)/EWT(m)/FCC JKT/TT/GW SOURCE CODE: UR/0007/66/000/008/0891/0899

ACC NR: AP6028010

AUTHOR: Vinogradov, A. P.; Surkov, Yu. A.; Chernov, G. M.; Kirnozov, F. F.; Nazarkina, G. B. 82  
B

ORG: Institute of Geochemistry and Analytical Chemistry im. V. I. Vernadskiy, AN SSSR, Moscow (Institut geokhimii i analiticheskoy khimii AN SSSR)

TITLE: Measurement of gamma-radiation of the lunar surface by the Luna-10 spaceship  
[Paper presented at the Seventh COSPAR Meeting held in Vienna in May 1966]

SOURCE: Geokhimiya, no. 8, 1966, 891-899

TOPIC TAGS: radiation measurement, gamma radiation, moon, lunar probe, scintillation spectrometer

ABSTRACT: The spaceship Luna 10, placed into a selenocentric orbit on 3 April 1966, was equipped with a 32-channel scintillation spectrometer to investigate the intensity and spectral composition of gamma-radiation emitted from the lunar surface. The absence of an atmosphere sufficiently dense to absorb gamma-rays makes it possible for a spaceship in lunar orbit to register gamma-radiation. However, the counting rate measured from an orbiting spaceship decreases as a result of a decrease in the solid angle subtended by the visible surface

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ACC NR: AF6028010

of the Moon, which was 0.9 $\pi$  at periselene and 0.46 $\pi$  at aposelene in the initial orbit.

It is known that the content of natural radioactive elements (U, Th, K<sup>40</sup>) in terrestrial rocks decreases from acidic to basic to ultrabasic rocks and that the decrease covers a range of several orders of magnitude. Therefore, it was expected that it would be possible to determine the type of rocks present in the lunar surface from the relative content of U, Th, and K established from the  $\gamma$ -ray spectrum. In conducting the experiments, the fact that the level of  $\gamma$ -radiation from natural radioactive elements can be lower than the level of  $\gamma$ -radiation produced during the interaction of primary cosmic particles (primarily protons) with the lunar surface was taken into account by analyzing the characteristic  $\gamma$ -rays emitted during the interaction.

#### Instrumentation

The measurements were made with a scintillation spectrometer consisting of a 3 x 4-cm NaI(Tl) cylindrical crystal  $\gamma$ -ray detector with an FEU-16 photomultiplier and a pulse-height analyzer. To eliminate the back-

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ACC NR: AP6028010

ground from charged particles, the NaI(Tl) crystal was enclosed in a container of a thin plastic scintillator. The pulses generated by charged particles were registered by the NaI(Tl) crystal and the plastic scintillator and were then separated from the pulses generated by  $\gamma$ -rays which went practically unregistered by the plastic scintillator.

The scintillation spectrometer recorded  $\gamma$ -ray spectra in the energy ranges between 0.3—3.1 and 0.15—1.5 Mev. The switching of energy ranges was performed by ground command. The detector and the analyzer of the spectrometer were located in a hermetically sealed compartment under a shell 1 g/cm<sup>2</sup> thick.

### Experimental Results

Six  $\gamma$ -ray spectra in the energy range 0.3—3.1 Mev were obtained during the first month of operation of Luna 10. In addition, the integrated intensity of  $\gamma$ -radiation in the same energy range was obtained at approximately 15 points. The measurements were conducted over relatively wide surface areas covering the continents and the seas on both the light and the dark sides of the Moon. The height and the approximate selenographic coordinates

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L 04702-57

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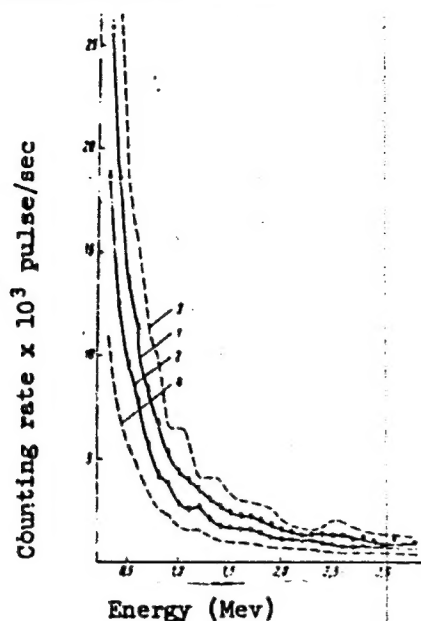


Fig. 1. Gamma-ray spectra obtained by Luna 10 while in orbit around the Moon and along the trajectory of the flight from the earth to the Moon

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1 -  $\gamma$ -ray spectrum of the lunar rocks together with the background; 2 -  $\gamma$ -ray spectrum of the background due to interaction of cosmic rays with the material of Luna 10 corrected for the screening by the Moon; 3 and 4 - same spectra as those given by 1 and 2, respectively, recalculated to represent measurements which would be taken at the surface of the Moon. The errors shown are root-mean-square errors.

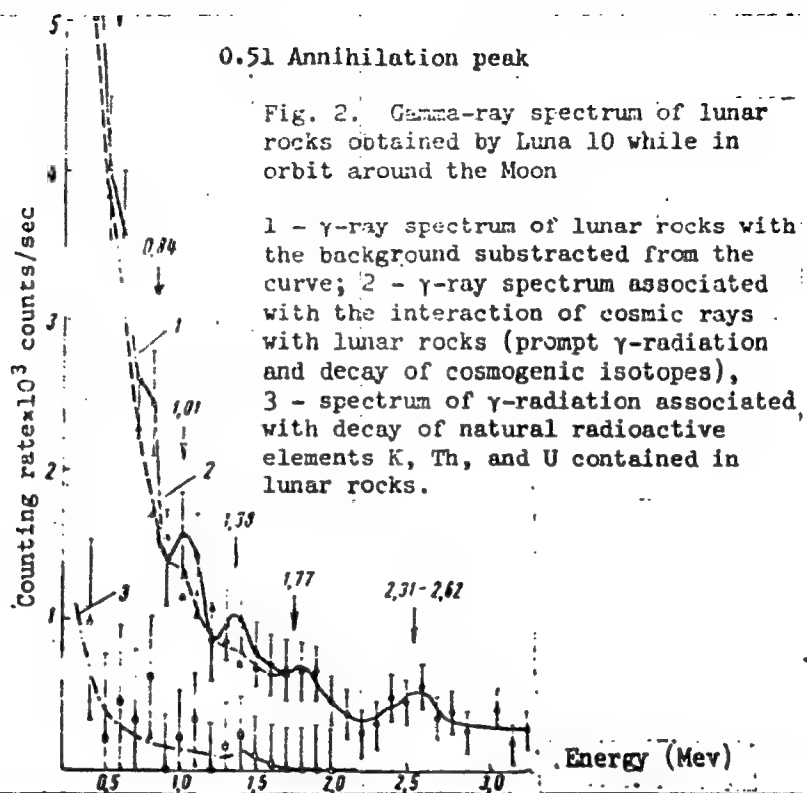
interaction of cosmic rays with the substance of Luna 10, taking the screening by the moon into account, is also shown in Fig. 1 (curve 2).

Compared to the counting rate of  $\gamma$ -rays measured along the flight trajectory, the counting rate in orbit around the Moon increased by 30—40%.

As a result of the screening effect of the Moon, the background due to irradiation of the spaceship by cosmic particles near the Moon decreases and is equal to about 78—89% of the background encountered along the trajectory of the flight. The background spectrum was measured during the flight

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ACC NR: AP6028010

hard  $\gamma$ -rays with energies in excess of 1.5 Mev while the spectrum of natural radioactive elements is characterized by a steep slope at higher energies and the absence of  $\gamma$ -rays with energies greater than 2.62 Mev. This shows that most  $\gamma$ -radiation from the lunar surface is not associated with the natural radioactivity of U, Th, and  $K^{40}$  but is the result of the interaction of cosmic rays with the lunar substance and the decay of cosmogenic isotopes.

Table 2 shows the characteristic  $\gamma$ -rays identified from the lunar  $\gamma$ -ray spectra and the principal nuclear reactions involving the probable constituent elements of lunar rocks. It can be seen from Table 2 that O, Si, Al, and Mg are likely the most widely distributed elements in lunar rocks.

Table 2. Energies of Gamma Rays Identified From the Lunar Gamma-Ray Spectra

Energy (Mev)	Principal Nuclear Reactions Causing Emission of Characteristic Gamma-Rays
0.84	$Al^{27}(p,p'\gamma)Al^{27}$ , $Si^{28}(p,2p\gamma)Al^{27}$ , $Fe^{56}(p,p'\gamma)Fe^{56}$
1.01	$Al^{27}(p,pn\gamma)Al^{26}$ , $Si^{28}(p,2pn\gamma)Al^{26}$
1.37	$Mg^{24}(p,p'\gamma)Mg^{24}$ , $Al^{27}(p,pf\gamma)Mg^{24}$ , $Si^{28}(p,p\alpha\gamma)Mg^{24}$
1.78	$Mg^{24}(p,p\alpha\gamma)Ne^{20}$ , $Al^{27}(p,2p\gamma)Mg^{26}$ , $Si^{28}(p,p'\gamma)Si^{28}$
2.31	$O^{16}(p,2pn\gamma)N^{14}$ , $Mg^{24}(p,pn\gamma)Mg^{23}$ , $Mg^{24}(p,2p\gamma)Na^{23}$ , $Al^{27}(p,pfn\gamma)Mg^{23}$
2.62	

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Since the lunar surface is exposed to constant interaction with cosmic rays, all of the cosmogenic radioisotopes should be in radioactive equilibrium. Therefore, both long-lived and short-lived radioisotopes should be radioactive, and their content should be proportional to the effective cross section for their production. Calculations show that the main contribution to  $\gamma$ -ray emission is made by the decay of the following cosmogenic isotopes:  $O^{14}$  ( $T_{1/2} = 72$  sec,  $E_{\gamma} = 2.31$  Mev),  $O^{19}$  ( $T_{1/2} = 27$  sec,  $E_{\gamma} = 1.37$  Mev),  $F^{20}$  ( $T_{1/2} = 10.7$  sec,  $E_{\gamma} = 1.63$  Mev),  $Na^{22}$  ( $T_{1/2} = 2.6$  hr,  $E_{\gamma} = 1.28$  Mev),  $Na^{24}$  ( $T_{1/2} = 15$  hr,  $E_{\gamma} = 1.37$  Mev and  $2.76$  Mev). These radioisotopes are formed with a considerable yield in nuclear reactions involving the same rock-forming elements: Mg, Al, and Si.

The peak at 0.51 Mev, which is especially pronounced in the lunar  $\gamma$ -ray spectra measured in the energy range 0.15—1.5 Mev, is produced by  $\gamma$ -radiation emitted during annihilation.

Analysis of the results shows that the  $\gamma$ -radiation intensity corrected for the difference in height is practically constant above the different regions of the lunar surface (intensities did not differ by more than 40%). This can probably be attributed to the fact that the main source of  $\gamma$ -rays is cosmic radiation. A preliminary analysis shows that the total dose rate of

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ACC NR: AP6028010

assumption follows from the fact that the spaceship and its components were made of light alloys of Si, Al, and Mg with very little Fe, i. e., the dominant elements in the composition of rocks. Curve 3 in Fig. 2, obtained by subtracting curve 2 from curve 1, shows the  $\gamma$ -ray spectrum produced by the decay of natural radioactive elements. Fig. 2 shows that 90% of the intensity of gamma radiation emitted by lunar rocks is produced by radioactivity induced by cosmic rays and no more than 10% by decay of K, Th, and U.

Prior to the flight the  $\gamma$ -spectrometer aboard the spaceship was pre-calibrated using samples with a measured amount of K, Th, and U and also with rock samples containing different amounts of these elements. This procedure made it possible to calculate the  $\gamma$ -ray spectra, which should be obtained by the orbiting spaceship, emitted by rocks with different amounts of natural radioactive elements (it was assumed that the radiation produced by cosmic rays is absent). Fig. 3 shows such spectra which would be obtained at a height of 350 km with the background subtracted from the spectrum. The hatched areas correspond to range of concentrations of radioactive elements for given types of rock. The average values of concentrations of K, Th, and U were taken from a paper by A. P. Vinogradov (Geokhimiya, no. 7, 1962).

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L 04702-67

ACC NR: AF6028010

Comparison of the lunar  $\gamma$ -ray spectra with those of terrestrial rocks with a known content of K, Th, and U shows that at least in the regions of the Moon over which measurements were conducted there are no rocks on the lunar surface, or at a depth not exceeding 27 cm, containing the same amount of K, Th, and U as do the acidic terrestrial rocks, such as granites. The intensity of  $\gamma$ -radiation due to natural radioactivity (Fig. 2, curve 3) tends to indicate the presence of basic rocks such as basalts. However, at the present time it is impossible to exclude the possibility that the concentration of natural radioactive elements was estimated a bit too high. It is interesting to note that tektites, which have almost the same composition and amounts of U, Th, and K as acidic rocks, cannot be of lunar origin.

### Conclusions

The main results obtained from the measurements of the intensity and spectral composition of  $\gamma$ -radiation by the Luna 10 can be summarized as follows:

1. The overall level of  $\gamma$ -radiation of the lunar surface slightly exceeds that of the Earth. Preliminary results show that the intensity of  $\gamma$ -radiation of

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L 1702-07

ACC NR: AP6028010

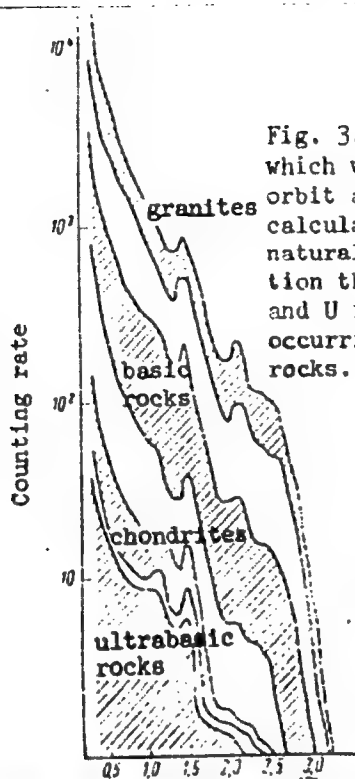


Fig. 3. The  $\gamma$ -ray spectra of lunar rocks which would be observed by a spaceship in orbit around the Moon. The spectrum was calculated from the  $\gamma$ -ray spectra of natural radioactive elements on the assumption that the relative contents of K, Th, and U in lunar rocks correspond to those occurring in the most important terrestrial rocks.

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Energy of  $\gamma$ -rays (Mev)

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the surface of the Moon is 20—30  $\mu$ r/h.

2. About 90% of the  $\gamma$ -rays emitted by the surface of the Moon is produced during interaction of cosmic rays with lunar substance (prompt  $\gamma$ -rays and decays of cosmogenic isotopes).

3. The basic rock-forming elements of the lunar surface are believed to be O, Mg, Al, and Si.

4. No difference was noted in intensity of  $\gamma$ -rays emitted by different regions of the lunar surface including the seas and the continents (variation of intensity did not exceed 40%).

5. The decay of K, Th, and U in lunar rocks does not contribute more than 10% to the total  $\gamma$ -ray emission of the lunar surface.

6. Comparison of the intensity of  $\gamma$ -radiation from the decay of natural radioactive elements K, Th, and U with the results obtained by a calibrated instrument from terrestrial rocks shows that the concentration of radioactive elements in lunar rocks is close to that of basic terrestrial rocks and differs greatly from acidic rocks. However, it can not be positively stated that the lunar surface contains no ultrabasic (meteoritic) substance. At the present time an attempt is being made to determine the relative content of O, Mg, Al, and Si in lunar rocks from the available  $\gamma$ -ray spectra produced in interactions with cosmic rays. Orig. art. has: 3 figures and 3 tables. [FSB: v. 2, no. 10]

SUB CODE: 22 / SUBM DATE: 24 Jun 66 / ORIG REF: 002

Card 15/15

L 14960-66 EWT(1)/EWT(m)/EWA(d) GW  
ACC NR: AP5022952

SOURCE CODE: UR/0007/65/000/008/0918/0935

AUTHOR: Surkov, Yu. A.; Nazarkina, G. B.

ORG: Institute of Geochemistry and Analytical Chemistry im. V. I. Vernadskiy, AN  
SSSR, Moscow (Institut geokhimii i analiticheskoy khimii AN SSSR)

TITLE: Nuclear reactions in meteorites

SOURCE: Geokhimiya, no. 8, 1965, 918-935

TOPIC TAGS: meteorite, radioactive isotope, nuclear reaction, cosmic ray effect, astrophysics, cosmogony

ABSTRACT: In a brief survey of the literature, the authors discuss various problems which have recently arisen with the analysis of isotopes formed by cosmic rays in meteorites and other objects from outer space. The sources considered in this paper are divided into two categories: astrophysical and nuclear. The first deals with problems in the origin and evolution of meteorites and cosmic rays, while the second is concerned with a study of the structure of atomic nuclei and the mechanism of nuclear reactions under the influence of high energy particles. Tables are given showing the radioactivity of cosmogonic isotopes as well as the concentration of

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L 14967-66

ACC NR: AP5022952

stable isotopes in iron and stony meteorites. The cosmic age of meteorites is determined from the ratio of the concentration of cosmogenic stable nuclei to their rate of formation at the present time. It is found that most of the stony meteorites have a cosmic age of  $10^6$ - $6 \cdot 10^7$  years. The cosmic age of iron meteorites is found to be  $1$ - $7 \cdot 10^8$  years. All meteorites whose ages have been measured are younger than the geological age of the earth, which is  $\sim 4.5 \cdot 10^9$  years. It is concluded that all meteorites were produced in one or two gigantic catastrophies. Curves are given showing the accumulation of cosmogenic isotopes in a meteorite. These curves show that the number of stable isotopes increases constantly. Short bursts of cosmic rays have practically no effect on the radioactivity of long-lived isotopes. Short-lived isotopes quickly reach equilibrium and the curve for their radioactivity with respect to time is practically a repetition of that for the intensity of cosmic rays. After the meteorite falls to the earth, the radioactivity of the corresponding isotopes falls exponentially. The number of stable isotopes continues to increase even after the fall. The integral spectrum of protons and alpha particles from primary cosmic radiation is given. Rocket data show that the integral intensity of cosmic particles of galactic origin at great distances from the earth is  $\sim 2.5$  particles/cm<sup>2</sup>. A curve is given showing the integral spectrum of cosmic rays

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L 14960-66  
ACC NR: AP5022952

generated during solar flares. Hypotheses explaining the mechanisms responsible for various nuclear phenomena caused by high energy particles are discussed. Experimental data indicate that cosmogonic isotopes are formed in different meteorites under identical conditions. However, the differences in the meteorites with respect to composition and size as well as the difference in ages cause wide variation in the concentration of cosmogonic isotopes. Orig. art. has: 5 figures, 2 tables, 10 formulas.

SUB CODE: 03,04 /

SUBM DATE: 00/

ORIG REF: 024/

OTH REF: 111

Card 3/3 *dc*

ACC NR: AP7005449

SOURCE CODE: UR/0020/66/170/003/0561/0564

AUTHOR: Vinogradov, A. P. (Academician); Surkov, Yu. A.; Chernov, G. M.

ORG: Institute of Geochemistry and Analytical Chemistry in. V. I. Vernadsky, AN SSSR  
(Institut geokhimi i analiticheskoy khimii AN SSSR)

TITLE: Investigations of the intensity and spectral composition of lunar gamma radiation on the automatic station "Luna-10"

SOURCE: AN SSSR. Doklady, v. 170, no. 3, 1966, 561-564

TOPIC TAGS: gamma spectrum, gamma spectrometer, scintillation spectrometer, bremsstrahlung, cosmic radiation, meson, lunar satellite, photomultiplier/Luna-10 lunar satellite, FSU-16 photomultiplier

ABSTRACT: "Luna-10" carried a scintillation gamma spectrometer with a detector of  $\gamma$ -radiation; this was a NaI(Tl) crystal measuring 30 x 40 mm, connected to a FSU-16... photomultiplier, and a pulse amplitude analyzer. The instrument made it possible to measure the spectrum of  $\gamma$ -radiation against a background of charged particles. The instrument recorded the spectrum of  $\gamma$ -radiation in two ranges: from 0.3 to 3.1 MeV and from 0.15 to 1.5 MeV. During the first month of operation of "Luna-10" it was possible to obtain 6 spectra of  $\gamma$ -radiation in the energy range from 0.3 to 3.1 MeV. In addition, at approximately 15 points the intensity of  $\gamma$ -radiation was measured in this same range of energies. The measurements covered rather extensive areas of the surface, including both the "continents" and "seas" on both the visible and far sides. Analysis of the form of the lunar  $\gamma$ -spectra revealed that they differ

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UDC: 523.3.37+523.3.32

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ACC NR: A.7007599

SOURCE CODE: UR/0293/66/004/006/0871/0879

AUTHOR: Vinogradov, A. P.; Surkov, Yu. A.; Chernov, G. M.; Kirnozov, F. F.;  
Nazarukina, G. B.

TITLE: Preliminary results of measurements of gamma radiation of the  
lunar surface on the space station "Luna-10"

SOURCE: Kosmicheskiye issledovaniya, v. 4, no. 6, 1966, 871-879

TOPIC TAGS: lunar satellite, gamma spectrometer, cosmic radiation

SUB CODE: 22, 20, 13

ABSTRACT: Experimental investigations of the intensity and spectral  
composition of gamma radiation of lunar rocks made using a gamma spectro-  
meter carried aboard the automatic station "Luna-10" demonstrated that:  
1) The general level of gamma radiation of lunar rocks approaches the  
level of gamma radiation over rocks of the earth's crust, somewhat  
exceeding the latter. According to a preliminary estimate, the intensity  
of the gamma radiation at the lunar surface is 20-30  $\mu$ R/hour. 2) The  
principal contribution to lunar gamma radiation is from processes of the  
interaction of cosmic rays with lunar matter (instantaneous gamma radiation  
and the decay of cosmogenic isotopes). About 90% of the total lunar gamma  
radiation can be attributed to these processes. 3) Analysis made it  
possible to identify in the lunar spectrum photopeaks from gamma quanta  
emitted during the interaction of cosmic particles with the principal  
rock-forming elements of the lunar surface -- O, Mg, Al, Si -- and  
gamma quanta emitted during the decay of cosmogenic isotopes. 4) The  
results of measurements over different regions of the lunar surfaces,  
including the regions of the lunar "continents" and "Seas" did not make

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UDC: 629.195.3:523.36

092815-43

ACC NR: AP7005118

SOURCE CODE: UR/0007/66/000/008/0891/0899

AUTHOR: Vinogradov, A. P.; Surkov, Yu. A.; Chernov, G. M.; Kirnozov, F. F.;  
Nazarkina, G. B.

ORG: Institute of Geochemistry and Analytical Chemistry im. V. I. Vernadskiy,  
AN SSSR, Moscow (Institut geokhimii i analiticheskoy khimii AN SSSR)

TITLE: Measurements of gamma radiation of the lunar surface by the space  
station Luna-10

SOURCE: Geokhimiya, no. 8, 1966, 891-899

TOPIC TAGS: gamma spectrum, lunar satellite, earth crust, lunar surface, lunar  
radiation / Luna-10 lunar satellite

ABSTRACT:

During its first month of operation the lunar satellite "Luna-10" obtained six spectra of gamma radiation in the energy range from 0.3 to 3.1 MeV. In addition, at about 15 points it measured the total intensity of gamma radiation in the same energy range. The measurements covered extensive areas of the surface of both the seas and continents on both sides of the moon. It was found that the general level of gamma radiation of lunar rocks approaches the level of gamma radiation over the rocks of the earth's crust, somewhat exceeding the latter. The preliminary estimate of gamma radiation for the lunar surface is 20-30  $\mu$  curies. The principal contribution to lunar gamma radiation is from processes of interaction of cosmic rays with lunar matter (instantaneous gamma radiation and the decay of isotopes). About 90% of the total lunar gamma radiation can be attributed to these processes. Analysis

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CC NR: AP7005118

makes it possible to identify in the lunar spectrum photopeaks from gamma quanta emitted at the time of interaction between cosmic particles and the principal rock-forming elements of the lunar surface — O, Mg, Al, Si, as well as gamma quanta emitted during the decay of cosmogenic isotopes. (The possibility of determining the relative content of these elements now is being studied.) Results of measurements over different regions of the lunar surface, including the seas and continents, did not reveal an appreciable difference in the intensity of gamma radiation over these regions (intensity variations do not exceed 40%). In the total intensity of gamma radiation of lunar rocks the percentage of radiation caused by decay of K, Th and U is approximately 10%. Comparison of the intensity of gamma radiation from decay of the natural radioactive elements K, Th and U with the results of calibration of the instrument against terrestrial rocks makes it possible to ascribe to lunar rocks concentrations of radioactive elements close to terrestrial rocks of basic composition (such as basalts). The data indicate that there are no areas of rocks with concentrations of radioactive elements such as terrestrial granites, and especially none with ore concentrations of K, Th and U. Orig. art. has: 3 figures and 3 tables. [JPRS: 38,460]

SUB CODE: 03,22,20 / SUBM DATE: 24Jun66 / ORIG REF: 002

ard 2/2

S/124/61/000/009/035/058  
D234/D303

AUTHOR: Surkov, Yu.P.

TITLE: Effect of the elasticity of fixing ends on the natural vibrations of rods

PERIODICAL: Referativnyy zhurnal. Mekhanika, no. 9, 1961, 13, abstract 9 V100 (Uch. zap. Kuybyshevsk. gos. ped. in-t, 1959, no. 29, 79-84)

TEXT: Longitudinal and transverse vibrations of rods with elastically fixed ends are considered. The problem is solved by the method of perturbations. The parameters which enter into the boundary conditions are regarded as small which allows one to look for the eigenfunctions and eigenvalues of the problem in the form of series expansion in powers of these parameters. The solution of the undisturbed problem, differing from the former by the parameters of the boundary conditions being equal to 0, is assumed to be known. "Additions" to the solution of the undisturbed problem

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Effect of the elasticity...

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D234/D303

are obtained by utilizing the normalizing relations of the eigenfunctions of the undisturbed and the disturbed problem. Owing to the complicated character of the calculations, the solution is limited to finding the first approximation for the fundamental tone of the vibrations which gives an accuracy sufficient for practical purposes. It is remarked that elastic fixing of the ends lowers the eigenfrequencies of the rod which agrees with theory. [Abstracter's note: Complete translation]

Card 2/2

Report presented at the 1st All-Union Congress of Theoretical and Applied Mechanics,  
Moscow, 27 Jan - 3 Feb '60.

130. A. A. Dymov (Moscow): Problems of the theory of plasticity under combined loading.
131. I. A. Zhurav (Leningrad): Elastic-plastic vibrations of rods of non-cylindrical cross section.
132. V. I. Kuznetsov (Leningrad): The forced non-linear (flange) vibrations of a homogeneous prismatic rod and a very long rectangular plate.
133. A. A. Krasovskii (Moscow): On a method of solving the equations of motion of a viscoelastic material in the presence of a magnetic field.
134. A. A. Krasovskii (Moscow): On engineering method for the design of a non-prismatic shell.
135. I. A. Kuznetsov (Leningrad): The distribution of vertical compressive stresses and strains in foundations in homogeneous or stratified soils.
136. A. A. Krasovskii (Moscow): Loading of multilayer plates of variable stiffness.
137. I. A. Kuznetsov (Leningrad): The effect of aging and anisotropy in the creep of concrete.
138. I. A. Kuznetsov (Leningrad): On the time of rupture in creep.
139. A. A. Krasovskii (Moscow): On some variational principles for stresses in the theory of plasticity.
140. A. A. Krasovskii (Moscow): A procedure of determining an upper bound diagram for large deformations.
141. A. A. Krasovskii (Moscow): Some generalizations of the formulation of elastostatic and elastodynamic problems and methods for their solution.
142. A. A. Krasovskii (Moscow): The flow of a visco-plastic medium in a semi-infinite body.
143. A. A. Krasovskii (Moscow): On the elastic equilibrium of thin elastic orthotropic plates.
144. A. A. Krasovskii (Moscow): Limits of the influence of plasticity on the intensity of the loading in thin plates and shells.
145. A. A. Krasovskii (Moscow): Plastic shells of revolution of arbitrary thickness of a homogeneous isotropic material.
146. A. A. Krasovskii (Moscow): Dynamic stability of cylindrical and spherical shells.
147. A. A. Krasovskii (Moscow): The influence of initial imperfections on the stability of thin elastic shells against small disturbances under static compression.
148. A. A. Krasovskii (Moscow): Elastic stability and post-buckling behavior.
149. A. A. Krasovskii (Moscow): The influence of plasticity on the stability of thin elastic shells against small disturbances under static compression.
150. A. A. Krasovskii (Moscow): The influence of plasticity on the stability of thin elastic shells against small disturbances under static compression.
151. A. A. Krasovskii (Moscow): The influence of plasticity on the stability of thin elastic shells against small disturbances under static compression.
152. A. A. Krasovskii (Moscow): The influence of plasticity on the stability of thin elastic shells against small disturbances under static compression.
153. A. A. Krasovskii (Moscow): The influence of plasticity on the stability of thin elastic shells against small disturbances under static compression.
154. A. A. Krasovskii (Moscow): The influence of plasticity on the stability of thin elastic shells against small disturbances under static compression.
155. A. A. Krasovskii (Moscow): The influence of plasticity on the stability of thin elastic shells against small disturbances under static compression.
156. A. A. Krasovskii (Moscow): The influence of plasticity on the stability of thin elastic shells against small disturbances under static compression.
157. A. A. Krasovskii (Moscow): The influence of plasticity on the stability of thin elastic shells against small disturbances under static compression.
158. A. A. Krasovskii (Moscow): The influence of plasticity on the stability of thin elastic shells against small disturbances under static compression.
159. A. A. Krasovskii (Moscow): The influence of plasticity on the stability of thin elastic shells against small disturbances under static compression.
160. A. A. Krasovskii (Moscow): The influence of plasticity on the stability of thin elastic shells against small disturbances under static compression.
161. A. A. Krasovskii (Moscow): The influence of plasticity on the stability of thin elastic shells against small disturbances under static compression.
162. A. A. Krasovskii (Moscow): The influence of plasticity on the stability of thin elastic shells against small disturbances under static compression.
163. A. A. Krasovskii (Moscow): The influence of plasticity on the stability of thin elastic shells against small disturbances under static compression.
164. A. A. Krasovskii (Moscow): The influence of plasticity on the stability of thin elastic shells against small disturbances under static compression.
165. A. A. Krasovskii (Moscow): The influence of plasticity on the stability of thin elastic shells against small disturbances under static compression.
166. A. A. Krasovskii (Moscow): The influence of plasticity on the stability of thin elastic shells against small disturbances under static compression.
167. A. A. Krasovskii (Moscow): The influence of plasticity on the stability of thin elastic shells against small disturbances under static compression.
168. A. A. Krasovskii (Moscow): The influence of plasticity on the stability of thin elastic shells against small disturbances under static compression.
169. A. A. Krasovskii (Moscow): The influence of plasticity on the stability of thin elastic shells against small disturbances under static compression.
170. A. A. Krasovskii (Moscow): The influence of plasticity on the stability of thin elastic shells against small disturbances under static compression.

ZUBOV, V. Ya., doktor tekhn.nauk, prof.; SOKOLOV, N.V., kand.tekhn.nauk;  
KRASIL'NIKOV, L.A., inzh.; GRACHEV, S.V., inzh.; Prinsipali uchastiye:  
SURKOV, Yu. P., inzh.; LISENKO, A.F., tekhnik

Deformation of metastable austenite and the strength of steel  
strip. Stal' 21 no.6:549-551 Je '61. (MIRA 14:5)

1. Beloretskiy staleprovolochnyy zavod i Ural'skiy politekhnicheskii institut.

(Steel--Hardening)

(Metallography)

33461

S/129/62/000/001/004/011  
E073/E483

1.1700 1454, 1045

AUTHORS: Zubov, V.Ya., Doctor of Technical Sciences,  
Grachev, S.V., Surkov, Yu.P. Engineers

TITLE: Influence of thermomechanical treatment on the  
strength of steel wire

PERIODICAL: Metallovedeniye i termicheskaya obrabotka metallov,  
no.1, 1962, 20-22

TEXT: The authors studied the possibility of using thermo-  
mechanical treatment in the drawing of carbon- and low-alloy steel  
wire (L.A. Krasil'nikov and A.G. Lysenko participated in the  
experiments). The chemical compositions (%) of the steels  
investigated are given as follows:

	C	Mn	Si	Cr	Ni	Cu	P	S
77A (U7A)	0.71	0.27	0.21	0.08	0.10	0.11	0.020	0.025
710A (U10A)	1.01	0.20	0.18	0.12	0.12	0.20	0.019	0.006
65A (65G)	0.66	0.98	0.23	0.09	0.20	0.10	0.019	0.023
142 (E1142)	0.66	0.50	1.67	0.33	0.10	-	0.009	0.017

The initial wire diameters were 1.95 and 2 mm. The wire was  
heated for the drawing operation to 920 to 940°C by passing an  
Card 1/3

Influence of thermomechanical ..

33461

S/129/62/000/001/004/011  
E073/E483

electric current through it and cooled in a lead bath to 320 - 350 °C. The speed of movement of the wire was 10 m/min. The wire was deformed in a single pass (short incubation period) by 5 to 32%, using a soap-graphite lubricant. The final cooling after drawing was in air. After this, thermomechanical treatment specimens of the wire were tempered under laboratory conditions at 100 to 500 °C with a holding time of 1.5 min. The strength of the wire drawn whilst the austenite was in the super cooled state was very high. It was highest for the steel E1143, i.e. 306 kg/mm<sup>2</sup> (32% reduction and tempering at 350 °C for 3 min). Further experiments were carried out exclusively on this material. The hardness after thermomechanical treatment was higher by about 4 HRC units than for the same material quenched in the ordinary way. In addition, hardness of thermomechanically-treated material decreased more slowly with increasing tempering temperature than that of the same material after step-wise quenching. These differences were attributed to smaller grain-size of martensite and presence of strain hardened austenite in thermomechanically treated steel. Even after

Card 2/2

33461

Influence of thermomechanical ...

S/129/62/000/001/004/011  
E073/E483

3 minutes tempering at relatively high temperatures (450 to 500°C), hardness of thermomechanically treated steel was practically equal to that of the same material after the conventional hardening treatment. The strength of the wire increased with increasing reduction but there was a drop in strength after reductions not exceeding 6 to 8%. If reductions of the order of 30% are used (followed by tempering for 1 min at temperatures not exceeding 350°C) it is possible to produce thermomechanically treated wire with a strength of the order of 300 kg/mm<sup>2</sup>. There are 5 figures, 1 table and 1 Soviet-bloc reference.

ASSOCIATION: Ural'skiy politekhnicheskii institut  
(Ural Polytechnical Institute)

X

Card 3/3

ACCESSION NO: AP4009386

S/0126/63/016/006/0918/0921

AUTHORS: Sokolkov, Ye, N.; Surkov, Yu. P.

TITLE: Substructure formation in austenite steel during plastic deformation at high temperatures

SOURCE: Fizika metallov i metallovedeniye, v. 16, no. 6, 1963, 918-921

TOPIC TAGS: austenite steel, steel, steel substructure, plastic deformation, high temperature deformation, Cr-Ni-Mn steel, W alloy, Mo alloy, steel microstructure

ABSTRACT: The effect of temperature and deformation velocity on the formation of substructure in steel was studied in the process of plastic deformation at high temperatures. The samples consisted of Cr-Mn austenite steel (0.37% C) alloyed with W and Mo. Their substructure (revealed by etching) was studied microscopically and the structure patterns were photographed. It was established that a plastic deformation of the metal at 1000-1200C and at deformation velocity 0.015-0.0035 1/sec caused the appearance of substructure. The size of the substructure elements increased with the increase in temperature and with the decrease in deformation speed. The origin of the substructure observed was explained by the redistribution of dislocations in the process of deformation at high temperatures.

Card 1/2

ACCESSION NO: AP4009386

"We express our gratitude to V. D. Sadovskiy for his participation in the discussion of the results. V. A. Yudin conducted the electron-microscope studies."  
Orig. art. has: 2 figures.

ASSOCIATION: Institut fiziki metallov AN SSSR (Institute of Physical Metallurgy AN SSSR)

SUBMITTED: 28Jul63

DATE ACQ: 03Feb64

ENCL: 00

SUB CODE: ML

NO REF SOV: 005

OTHER: 006

Card 2/2

ACCESSION NR: AT4046864

S/0000/64/000/000/0331/0335

AUTHOR: Sokol'kov, Ye. N., Sadovskiy, V.D., Surkov, Yu. P., Chuprakova, N.P., Nichkova, M.M. B

TITLE: Investigation of the hardening and structural stability of austenitic alloys after high temperature thermomechanical treatment

SOURCE: AN SSSR. Nauchny'y sovet po probleme zharoprochny'y splavov. Issledovaniya [Scientific Council on the Problem of Heat-Resistant Steels and Alloys]. Moscow: Izd-vo Nauka, 1964, 331-335

Keywords: thermomechanical treatment; alloy hardening; alloy structure; alloy stability; structural stability; high temperature; plastic deformation

ABSTRACT: Improvement of heat resistance by high-temperature thermomechanical treatment is achieved by the creation of a special structure in the material during hot plastic deformation. The effect of temperature and plastic deformation rate on the structural stability of austenitic steel with admixtures of tungsten and titanium after high-temperature thermomechanical treatment and aging. The effect of temperature and plastic deformation rate

L 9960-65

ACCESSION NR: AT4046864

were studied in relation to recrystallization in alloys rolled at a rate of 1.5 m/min at 950-1150C. Samples for rolling were 11.5x11.5X60 mm, and for upsetting were 50x50x70 mm. Special insulation was used during upsetting to prevent rapid cooling. All samples were cooled in water after plastic deformation. The effects of aging were studied by hardness measurements, while structural stability was measured by microstructural analysis. Hardness measurements showed that all alloys selected in the test showed a higher hardness than after the usual thermal treatment. The difference in hardness in comparison with the usual hardening procedures was 15-20 kg/mm<sup>2</sup> even after high temperature thermomechanical treatment at 800C for 32 hours. Similar results were obtained for other heating and aging temperatures. Impact toughness was also higher after high temperature thermomechanical treatment (12-13 kg-m/cm<sup>2</sup> instead of 5-7).

Microstructural analysis showed that the stability of the investigated alloys was improved by the high temperature thermomechanical treatment, resulting in a redistribution of dislocations, avoiding "critical" fields where distorted grains appear. Microstructural analysis also showed that lowering of the deformation rate decreased the tendency toward recrystallization, and altered the grain boundary deviations from a dentate to a wave-like pattern. These results lead to new possibilities for applying high-temperature thermomechanical treatment in industry. Special investigations will be required, however, to find the effect

L 9700-65

ACCESSION NR: AT4046864

of this structure on heat resistance. "The X-ray analysis was made by D.I. Gurfel".  
Orig art has 2 figures.

ASSOCIATION: none

SUBMITTED: 16Jun64

ENCL: 00

SUB CODE: MM

NO REF SOV 005

OTHER: 001

Card

7/3

L 8914-66 EWI(m)/EWA(d)/EWP(t)/EWP(z)/EWP(b) HJM/JD

ACC NR: AP5027141

UR/0126/65/020/004/0561/0565

AUTHOR: Sokolkov, Ye. N.; Surkov, Yu. P.; Gurfel', D. I.

ORG: Institute for the Physics of Metals, AN SSSR (Institut fiziki metallov AN SSSR)

TITLE: Effect of conditions of high temperature heat and mechanical treatment on the thin crystalline structure of chromium-nickel-manganese austenitic steel

SOURCE: Fizika metallov i metallovedeniye, v. 20, no. 4, 1965, .. 561-565

TOPIC TAGS: crystal structure, austenite steel, chromium steel, nickel steel, manganese steel, work hardening, metal heat treatment, plastic deformation/ EI481 chromium steel

ABSTRACT: A study was made of the fine crystal structure of chromium-nickel-manganese steel EI481 as a function of the conditions of high temperature heat and mechanical treatment: temperature and degree and rate of deformation. Samples with dimensions 50 x 50 x 75 mm were heated to 1200°C, held there for 1.5 hours, and deformed at this temperature and at 1100 and 1000° after cooling in the furnace

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UDC: 669.15.018.45

L 8914-66

ACC NR: AP5027141

Deformation was done by 25-30% upsetting in a press at a rate of 0.015, 0.0075, and 0.005 1/sec (the degree of deformation was evaluated by the change in height of the sample). After deformation (within 1-2 seconds), the samples were quenched in water. The test samples were subjected to metallographic and x-ray structural analysis. Study of the microstructure (illustrated in the article) shows that, as a result of high temperature heat and mechanical treatment, there appears a structure whose elements depend substantially on temperature and the rate and degree of plastic deformation. Treatment at 1200° at a minimum deformation rate leads to formation of subgrains with an average size of 30-40 microns. A decrease in deformation temperature to 1100° decreases the size of the subgrains to 15-20 microns. X-ray studies show that, in samples which have undergone conventional annealing, the grains have a sufficiently clear character with a small radial washing out, which probably indicates a certain elastic microdeformation of the lattice. For material subjected to high temperature heat and mechanical treatment, the x-ray studies indicate the formation within the grains of large mutually unoriented regions of the crystal lattice, that is, fragments. The magnitude of the plastic deformation has a complicated effect on the formation of the thin crystalline structure. At small reductions, the fragmentation of the structure is observed mainly in regions near the

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L 8914-66

ACC NR: AP5027141

grain boundaries while, with an increased degree of deformation,  
this process gradually extends over the whole volume of the grain.  
Orig. art. has: 3 figures.

SUB CODE: MM/ SUBM DATE: 15Aug64/

ORIG REF: 011

OTH REF: 004

Card 3/3

ACC NR: AT6034463

(A)

SOURCE CODE: UR/0000/66/000/000/0265/0271

AUTHOR: Surkov, Yu. P.; Sadovskiy, V. D.; Sokolov, Ye. N.; Pavlov, V. A.;  
Gaydukov, M. G.

ORG: none

TITLE: Effect of high temperature thermomechanical treatment at a small deformation rate on the heat resistance of Type KhN77YuR alloy

SOURCE: AN SSSR. Institut metallurgii. Svoystva i primeneniye zharoprochnykh splavov (Properties and application of heat resistant alloys). Moscow, Izd-vo Nauka, 1966, 265-271

TOPIC TAGS: metal heat treatment, heat resistance, metal deformation, metal recrystallization

ABSTRACT: High temperature thermomechanical treatment, concluding with deformation of the material at increased temperatures, and then cooling, eliminating the development of recrystallization due to the birth and growth of new grains, leads to a considerable improvement in the heat resistance properties of steels and alloys. The present article considers the effect of high temperature thermomechanical treatment at a small deformation rate ( $0.003-0.004 \text{ sec}^{-1}$ ) on the heat resistance of alloy KhN77TYuR. Samples with a size of  $50 \times 50 \times 75 \text{ mm}$  were heated to a temperature of

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ACC NR: AT6034463

1080° with a holding time of 8 hours, after which part of them were cooled in air (control samples), while the other part was subjected at the same temperature to 25-30% deformation. On the basis of the experimental results, the following conclusions were drawn: 1) high temperature thermomechanical treatment of alloy KhN77TYuR with a deformation rate of 0.003-0.005 sec<sup>-1</sup> assures a recrystallization structure in a cross section of the order of 50 x 50 mm, and leads to an improvement in heat resistance properties; 2) fragmentation of the structure in the alloy assures greater stability, and increases the temperature of articles made from the alloy by the method of high temperature thermomechanical treatment (up to 850°). Orig. art. has: 3 figures and 1 table.

SUB CODE: 11/ SUBM DATE: 10Jun66/ ORIG REF: 005

Card 2/2

RABINOVICH, V.S.; SURKOV, V.D.; SURKOVA, A.A.

Giardiasis in children. *Pediatrics* 37 no.7:88 J1 '59.  
(MIRA 12:10)

1. Iz detskogo otdeleniya bol'nitsy imeni N.A.Semashko g.Yaroslavlya.

(GIARDIASIS)

KOSHKO, I.I. FIATOV B.S.; STRAOKA, A.I.

Air drilling for seismic prospecting. Razved. i okh. naft.  
N 11.1 1964-65 N 164. GIRA 18-4

1. Moskovskiy ordena Tрудovogo Krasnogo Znameni institut  
petrolekhimicheskoy i gazovoy promyshlennosti imeni akademika  
I.M.Gubkina.

SURKOVA, A. V.; BLOSHTEYN, Ye. A.

Making forging die impressions by electric pulse techniques.  
Avt. prom. 29 no.5:38-39 My '63. (MIRA 16:4)

1. Nauchno-issledovatel'skiy institut avtomobil'noy promyshlennosti.

(Electric metal cutting)

OSTROVSKAYA, Sh. M.; YASINSKIY, A.V.; SURKOVA, D.F.

Materials on the epidemiology of Q fever in Tajikistan. Zdrav.  
Tadzh. 3 no.2:27-30 Mr-Apr '56 (MIRA 12:7)

1. Iz Stalinabadskego Instituta epidemiologii i gigiyeny (dir. -  
dotsent M.Ya. Rasulov).  
(TAJIKISTAN--Q FEVER)

OSTROVSKAYA, Sh.M.; YASINSKIY, A.V.; SURKOVA, D.F.

Results of a four-year study of Q fever in Tajikistan from 1953 to 1956. Zdrav.Tadzh. 6 no.4:18-22 J1-Ag '59. (MIRA 12:11)

1. Iz Stalinabadskogo instituta epidemiologii i gigiyeny.  
(TAJIKISTAN--Q FEVER)

... ..; ... .., ... ..

... .. activity of H ions in sulfonated polystyrene cation  
exchangers and in sulfuric acid solutions. 1981. ... ..  
... ..-404 ... ..

... ..  
... ..

SUREKOVA, L.

This should be the concern of all members of the plant. Pozh.  
delo 6 no.1:6 Ja '60. (MIRA 13:5)

1. Glavnyy inzhener Moskovskogo khimiko-farmatsevticheskogo  
zavoda imeni N.A.Semashko.  
(Chemical plants--Fires and fire prevention)

KAPITANENKO, N.; SURKOVA, L.

Weeds should be removed from fields. NTO 5 no.1:79 Ja '63.  
(MIRA 16:5)

(Weed control)

LAMIN, Serafim Ivanovich, kand. veter. nauk; SURKOVA, L.A., red.

[Use of macro- and microelements in endemic diseases of animals] Primenenie makro- i mikroelementov pri endemicheskikh zabolevaniyakh zhivotnykh. Ulan-Ude, Buriatskoe knizhnoe izd-vo, 1964. 34 p. (MIRA 18:2)

*SECRET, L F.*

ABSTRACT : USSR V  
CATEGORY : Pharmacology and Toxicology. Toxicology.  
Poisonous Plants  
ABST. JOUR. : Ekhsbl., No. 5 1959, No. 23297  
AUTHOR : Garkova, I. N.  
TITLE : On the Morphology of the Intramural Nervous  
Apparatus of the Heart in Trichodermatotoxicosis  
ORIG. PUB. : Med. zh. Uzbekistana, 1958, No 1, 37-38  
ABSTRACT : No abstract

Card: 1/1

VALYUNOVA, F.S.; SHYKOVA, L.I.

Determining the bromine numbers of organosilicon compounds  
containing unsaturated radicals. Plast. massy no. 12:51-52  
165 (MIRA 19:1)

SECRET, 4 N

8

✓2849

OBSERVATION OF FORMATION AND DECAY OF UN-  
STABLE PARTICLES IN EMULSION CHAMBERS. V. V.

Alpers, R. I. Gerastimova, I. I. Gurevich, A. P. Mishakova  
and L. B. Surkova. Doklady Akad. Nauk S.S.S.R. 105, 234-  
2 (1955) Nov. 11. (In Russian)

Track tracings of unstable particles were recorded on  
emulsion film. Gases of associated stars were studied to  
find  $K^0$  mesons associated with  $\Lambda^0$  and other particles.  
Investigations of 4-prong stars to find  $\pi$  mesons and 2-  
prong stars to find hyperons were made, 393 tracks of  $\pi$   
mesons were measured, 214 of which were formed inside  
of the emulsion chambers. An area of emulsion of 20cm<sup>2</sup>  
was analyzed. (R.V.J.)

PH

(4)

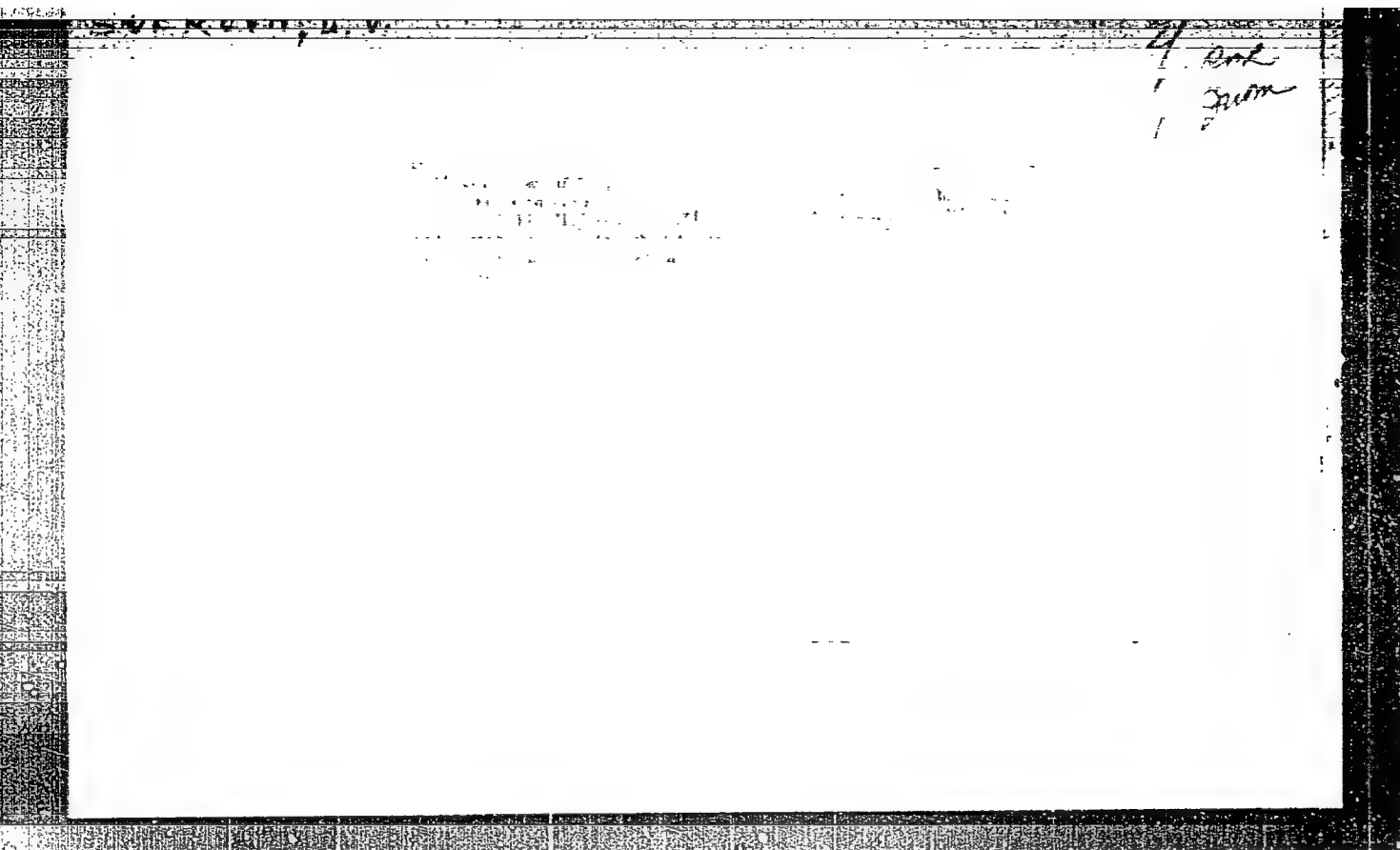
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APPROVED FOR RELEASE: 08/26/2000

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ALPERS, V.V.; GUREVICH, I.I.; SURKOVA, L.V.

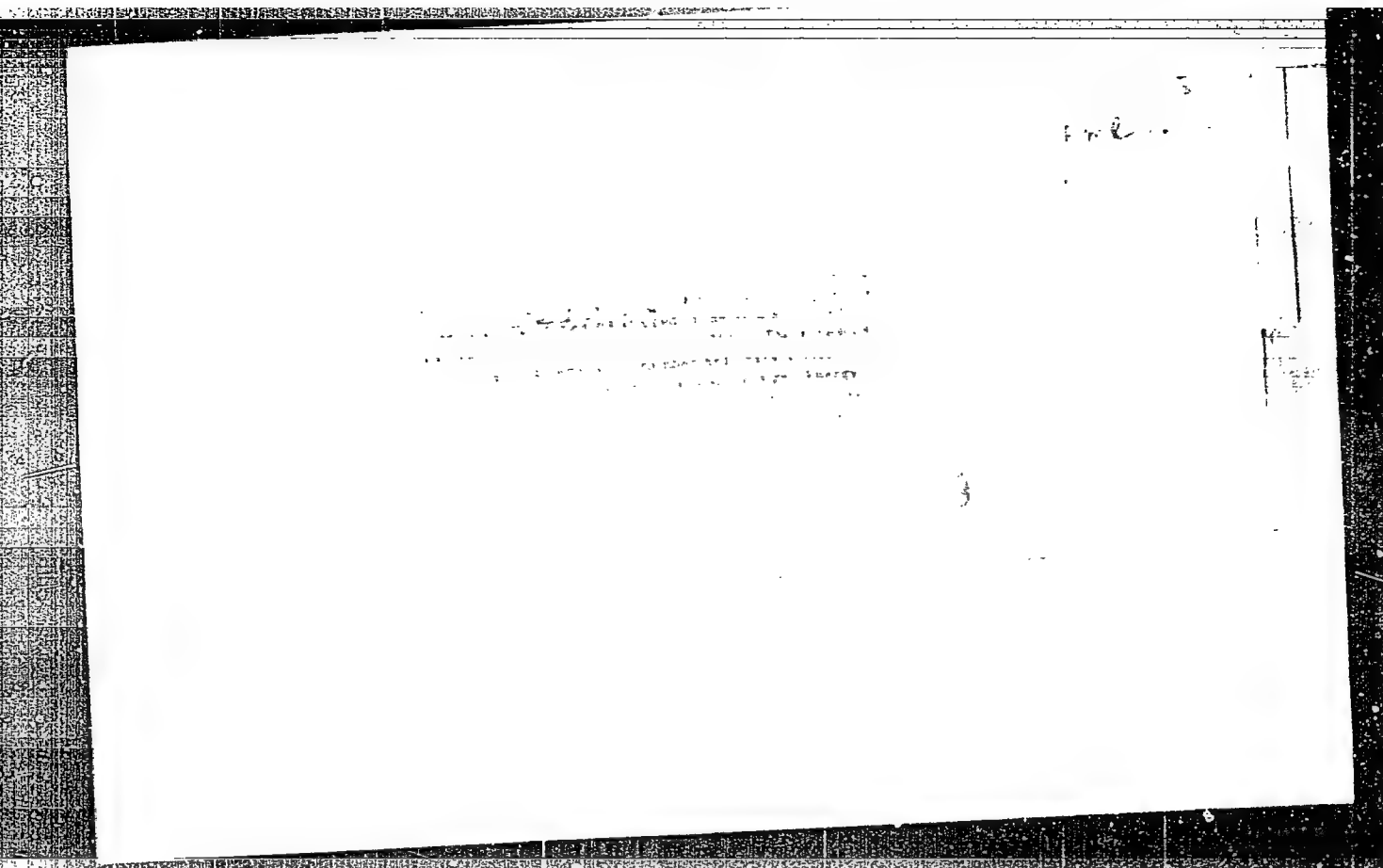
Emulsion chamber observations on unstable particle production and decay. Dokl.AN SSSR no.3:421-422 My '56. (MLRA 9:8)

1. Predstavleno akademikom L.A. Artsimovichem.  
(Cosmic rays) (Ionization chambers) (Photography,  
(Photography, Particle track)



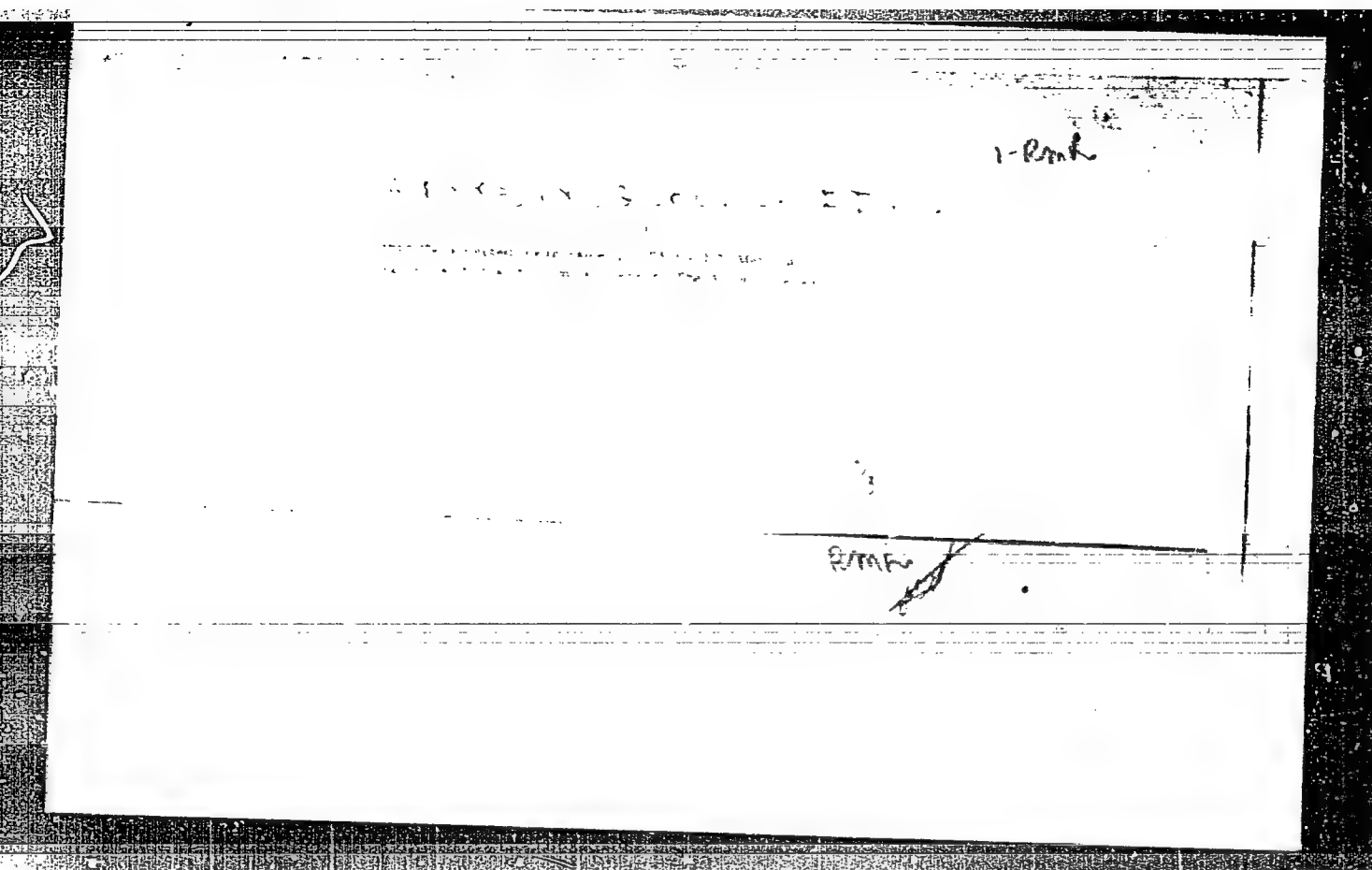
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CIA-RDP86-00513R001653930007-7"



PA - 2046

**AUTHOR:** AL'PERS, V.V., GUREVIC, I.I., KUTUKOVA, V.M., MISAKOVA, A.P.  
 NIKOL'SKIJ, B.A., SURKOVA, L.V.

**TITLE:** The Study of Explosion Showers produced by High Energy  
 Cosmic Particles (Russian).

**PERIODICAL:** Doklady Akademii Nauk SSSR, 1957, Vol 112, Nr 1, pp 33-36  
 (U.S.S.R.)  
 Received: 2 / 1957  
 Reviewed: 3 / 1957

**ABSTRACT:** The present work deals with the preliminary results obtained  
 by studying 29 showers by the method of the emulsion chamber.  
 The emulsion chamber consisted of 100 layers of 10 cm diameter  
 and 450  $\mu$  thickness. This emulsion chamber was irradiated in  
 May 1955 for 7 hours at a height of 27 km. On the occasion of  
 the microscopic investigation of these emulsions the explosion  
 showers were fixed with more than 5 relativistic traces which  
 are in a sufficiently narrow cone. Furthermore, the rays were  
 fixed with more than 3 relativistic traces. On the occasion  
 of the examination of 26,5 cm<sup>3</sup> photoemulsion 27 explosion  
 showers and 29 rays were found. In the course of a further in-  
 vestigation of the rays through the emulsion chamber it was  
 found that two of them originated from stars. The remaining  
 27 rays were found to be electron-photon showers. On the  
 occasion of the microscopic investigation of the explosion  
 showers the primary particle which excites the shower, the

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PA - 2046

The Study of Explosion Showers produced by High Energy  
Cosmic Particles (Russian).

are obtained on this occasion, are explicitly given for the case of ultrarelativistic shower particles. By assuming a nucleon-nucleon production mechanism of the shower we find  $n_s = k \sqrt{\cotg \theta} 1/2$ . Some showers satisfy this relation and can thus be assigned to nucleon-nucleon interaction. However, the angular distributions of the shower particles contradict this conclusion, for a noticeable asymmetry of angular distribution was found. All showers produced by nucleons and  $\alpha$ -particles have a marked asymmetry with respect to the angle  $\theta = \pi/2$ .

ASSOCIATION: Not given

PRESENTED BY:

SUBMITTED:

AVAILABLE: Library of Congress

Card 3/3

GUREVICH, I.I.; MISHAKOVA, A.P.; NIKOL'SKIY, B.A.; SURKOVA, L.V.

Explosion showers produced by high energy cosmic ray particles. Zhur.  
eksp. i teor. fiz. 34 no.2:265-280 1958. (MIRA 11:4)

1. Akademiya nauk SSSR.  
(Cosmic rays)

*Surkova L.V.*

AUTHORS: Gurevich, I. I., Kutukova, V. M., Mishakova, 56-2-2/51  
A. P., Nikol'skiy, B. A., Surkova, L. V.

TITLE: The Asymmetry in the Angular Distribution of  $\mu^+ \rightarrow e^+$   
Decay Electrons Observed in Photographic Emulsions  
(Asimmetriya uglovogo raspredeleniya elektronov  $\mu^+ \rightarrow e^+$  -  
-raspada po nablyudeniyam v fotoemul'sii)

PERIODICAL: Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, 1958,  
Vol 34, Nr 2, pp 280-285 (USSR)

ABSTRACT: An emulsion chamber of 7 x 4 x 1 cm consisting of 23  
layers of an HMKO photographic emulsion from the P type  
was irradiated with slow positive pions of the OYU-1  
(Ob'yedinennyy institut yadernykh issledovaniy - United  
Institute for Nuclear Research) synchrocyclotron. The chamber  
was mounted in a double magnetic screen in order to make  
sure that the scattered magnetic field of the synchrotron  
did not lead to a precession of the spin of the myon. In  
looking through the emulsions after developing those cases  
were selected where the whole myon track of the  $\pi \rightarrow \mu$ -decay  
is situated in a single layer of the emulsion. In this the

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The Asymmetry in the Angular Distribution of  $\mu^+ \rightarrow e^+$  Decay  
Electrons Observed in Photographic Emulsions

56-2-2/51

myon is supposed to come to a standstill after the passage through at least  $50\mu$  of the surface of the non-developed layer of emulsion. The authors determined the angle  $\alpha$  between the direction of emission of the myon in the  $\pi \rightarrow \mu$ -decay and that of the electron of the  $\mu \rightarrow e$ -decay by determining the angle  $\alpha$  between these directions on the emulsion level and the angle of distribution  $\beta_1, \beta_2$  resp. of the traces of the myon, the electron towards the level of emulsion resp.. Furthermore an emulsion chamber of the same dimensions was irradiated with slow positive pions. The results of measurements are collected in a table. The angular distributions determined this way are shown by a diagram; they do not contradict the theoretical dependence  $1 + a \cos \theta$ ,  $a = (\lambda/3)(1 - \gamma)$ , where  $\gamma$  denotes the depolarization coefficient of myons. A relation for the determination of the optimum value of  $a$  is given. The magnetic field ( $H \sim 1100$  G) increases a little the asymmetry, i.e. it decreases the depolarization of the myons in the emulsion. But this effect is not regarded as strictly proved. The mean value of the parameter  $a$  calculated from the results of this work is  $a = -(0,108 \pm 0,0024)$ . The angular distribution for  $13770\mu$

Card 2/3

The Asymmetry in the Angular Distribution of  $\mu^+ \rightarrow e^+$  Decay      56-2-2/51  
Electrons Observed in Photographic Emulsions

→ decay processes proceeding from the results of various previous works and from those of the present investigation is also shown in a diagram. Within the error limits the angular distribution of the electrons of the relation  $1 + a \cos \theta$  is sufficient, where  $a = -(0,111 \pm 0,015)$ . There are 2 figures, 2 tables, and 13 references, 1 of which is Slavic.

ASSOCIATION:    AS USSR (Akademiya nauk SSSR)

SUBMITTED:      August 14, 1957

AVAILABLE:      Library of Congress

1. Photographic emulsions-Irradiation    2. Electrons-Distribution

Card 3/3

24(3), 21(7)  
AUTHORS:

SOV/56-36-4-65/70  
Ali-Zade, S. A., Gurevich, I. I., Dobretsov, Yu. P.,  
Nikol'skiy, B. A., Surkova, L. V.

TITLE:

The Asymmetry of Electron Angular Distribution in  $\mu^+ \rightarrow e^+$ -Decay  
in a Magnetic Field of 27000 G (Asimmetriya uglovogo raspredeleniya  
elektronov  $\mu^+ \rightarrow e^+$ -raspada v magnitnom pole 27000 G)

PERIODICAL:

Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1959, Vol 36,  
Nr 4, pp 1327-1329 (USSR)

ABSTRACT:

If angular distribution is described by the expression  
 $4\pi dN/d\Omega = 1 - a \cos\theta$  ( $a = \lambda P/3 = a_0 P$ ;  $\lambda = 3a_0 = -\cos(V, A)$  char-  
acterizes the ratio of the vectorial and pseudovectorial share  
of interaction in  $\mu^+ \rightarrow e^+$ -decay; P denotes muon polarization), it  
is found that the quantity a depends both on the measuring meth-  
od and on the nature of the depolarized matter. It attains a  
maximum value of  $a = 1/3$  at  $\cos(A, V) = -1$ . For NIKFI-R emulsions  
a was determined as amounting to  $0.092 \pm 0.018$ , for Ilford G-5  
it was 0.14. The maximum value attained by a for graphite is  
 $0.303 \pm 0.048$ . The depolarizing property of matter may be reduced  
by applying strong magnetic fields, the direction of which co-  
incides with muon polarization. The increase of a brought about

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SOV/56-36-4-65/70

The Asymmetry of Electron Angular Distribution in  $\mu^+ \rightarrow e^+$ -Decay in a Magnetic Field of 27000 G

by magnetic field can be described by  $a = a_0 \left[ 1 - \frac{0.5}{1 + (\mu H / \Delta E)^2} \right]$ ;

$a_0$  denotes the  $a$ -value if no depolarization takes place,  $\Delta E$  - the energy of fine-structure splitting of the  $\mu$ -mesic atom in the  $^1S$ -state. An experimental checking of this formula in fields of up to 14000 G showed that by it the dependence  $a(H)$  is qualitatively described. The authors determined  $a$  in the  $\pi \rightarrow \mu \rightarrow e$ -decay in photoemulsions at  $H = 27000$  G.  $a$  was determined from the ratio  $a = 2(N_{\text{backward}} - N_{\text{forward}}) / (N_{\text{backward}} + N_{\text{forward}})$ . Results:

For  $\theta = 0 - 30^\circ$   $a_1 = 0.315 \pm 0.026$

$\theta = 150 - 180^\circ$   $a_2 = 0.295 \pm 0.027$ .

Mean value formation averaged over the directions in which muons fly off gives:  $a_3 = 0.305 \pm 0.019$ . If  $a_{\text{real}} = a_3 / \cos \theta$ , one obtains  $a_{\text{real}} = a_3 / 0.940 = 0.324 \pm 0.020$ . Herefrom it follows that  $|\lambda|P = 0.972 \pm 0.06$ , i.e.  $|\lambda|$  with an accuracy of up to  $a$

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The Asymmetry of Electron Angular Distribution in  $\mu^+ \rightarrow e^+$ -Decay in a Magnetic  
Field of 27000 G SOV/56-36-4-65/70

statistical error of  $\pm 6\%$  attains its maximum value and  $P \approx 1$ . This indicates a considerable degree of inaccuracy of the formula describing  $a(H)$ . The authors finally thank B. S. Neganov and B. V. Sokolov for their help in irradiating the photoemulsions, D. M. Samoylovich for developing the emulsion, and further also V. M. Kutukova, A. M. Alpers, and G. V. Pleshivtseva for their assistance. There are 8 references, 2 of which are Soviet.

SUBMITTED: February 1, 1959

Card 3/3

21 (7)

AUTHORS:

Gurevich, I. I., Nikol'skiy, B. A.  
Surkova, L. V.

SOV/56-37-1-58/64

TITLE:

Three-Electron Decay of the  $\mu$ -Meson (Trekhelektronnyy raspad  $\mu$ -mezona)

PERIODICAL:

Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1959, Vol 37, Nr 1, pp 318 - 319 (USSR)

ABSTRACT:

The authors of the present "Letter to the Editor", when investigating the asymmetry of the angular electron distribution of  $\pi \rightarrow \mu \rightarrow e$ -decay, observed that in one case three relativistic electrons depart from the stopping point of the  $\mu$ -meson (cf. figure). All three electrons have large inclination angles with respect to the emulsion plane, and therefore exact measurement of grain density was impossible; it was, however, near that for relativistic particles (energy  $\sim 1$  Mev). The recorded part of the electron path length:  $L_{e_1} = 455 \mu$ ,  $L_{e_2} = 562 \mu$ ,  $L_{e_3} = 455 \mu$ .

The muon range amounts to  $R_\mu = 598 \mu$  in the case of an average path length of the muon of the  $\pi \rightarrow \mu$ -decay in a R-NIKFI-emulsion of  $602 \mu$ . The angles between the electrons:  $\theta_{12} = 8.6^\circ$ ,  $\theta_{13} =$

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Three-Electron Decay of the  $\mu$ -Meson

80V/56-37-1-58/64

$\theta_{23} = 10.6^\circ$ ,  $\theta_{23} = 10.5^\circ$ . The case observed cannot be interpreted as a muon decay in electron +  $\gamma$  with a transformation of the quantum into electron + positron at the place of decay, because in this case the direction of the departure of the particle pairs would have had to be opposite to the observed direction of flight of the decay electrons. The explanations  $\mu^+ \rightarrow e^+ + e^+ + e^- + \nu + \bar{\nu}$  or  $\mu^+ \rightarrow e^+ + \nu + \bar{\nu} + \gamma$  with following transformation of the quantum into a pair would be possible. The case described here was observed in connection with the evaluation of about 50,000 muon decays. Thus, the "three-electron" decay probability of the muon may be estimated at  $p(3e)/p(e) < 2 \cdot 10^{-5}$ . If the results obtained by other authors are taken into account, a probability of  $10^{-6}$  is obtained. This order of magnitude is obtained also if a radiation process of second order is assumed; emission of a virtual  $\gamma$ -quantum accompanying the departure of the electron with following transformation into an electron-positron pair, the pair energy of which may be estimated as amount-

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Three-Electron Decay of the  $\mu$ -Meson

SOV/56-37-1-58/64

ing to 15 Mev. The authors finally thank I. S. Shapiro for discussions. There is 1 figure.

SUBMITTED: April 17, 1959

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3/056/62/043/001/048/056  
B102/B104

AUTHORS: Ivanov, Yu. M., Nikol'skiy, B. A., Smirnov, B. M.,  
Surkova, L. V.

TITLE:  $\mu^+$ -meson depolarization in an electric field

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 43,  
no. 1(7), 1962, 337-339

TEXT: The authors studied the effect which a strong electric field ( $E \sim 10^5$  v/cm) exerts on the depolarization of  $\mu^+$  mesons resulting from  $\pi^+-\mu$  decays in photoemulsions. Depolarization of stopped muons is attributed mainly to production of muonium ( $\mu^+e^-$ ); it has, however, also been observed (Swanson, Phys. Rev. 112, 580, 1958) that the "stopped"  $\mu^+$  meson precessed in a transverse magnetic field and showed no further depolarization. Thus, muonium must be produced within a very short time immediately after the stoppage. It has not yet been verified by experiment whether the  $\mu^+$  meson in condensed matter decays as a free

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$\pi^+$ -meson depolarization in an ...

S/056/62/043/001/048/056  
B102/B104

particle or after having been captured by a molecule. The authors found out that electrical fields of  $E \sim 10^5$  v/cm were able to cause additional depolarization of the stopped muon; which is indicative of a captured muon. Such fields cannot depolarize muons in free or in muonium state. The experiments were made at the synchrocyclotron of the OIYaI with a pulsed 65-Mev  $\pi^+$  beam (pulse duration 500  $\mu$ sec). The muons arising in  $\pi \rightarrow \mu$  decays were stopped in НИКФИ-Р (NIKFI-R) emulsions with increased gelatine content, placed between electrodes. The pulsed field in the emulsion was  $1.2 \cdot 10^5$  v/cm (400- $\mu$  emulsion layer) and  $2.4 \cdot 10^5$  v/cm (200  $\mu$ ). The additional muon depolarization observed when the field was switched on proves that the stopped muon is captured by a gelatine molecule. There is 1 table.

SUBMITTED: May 7, 1962

Card 2/2

BEALINSKIY, L.P.; GRIN, V.G.; POSTEMO, G.V.; LAKHIN, V.V.; BURKOVA, L.V.

Monuron and simazine as algicides used against filamentous  
algae. Izv. Vsesoyuzn. Nauchn. Ts. morsk. biol. 14:52-65 '63. (MIRA 17:6)

1. Institut gidrobiologii AN UkrSSR, Kiev.

L 3202-66 JXT(C2)

ACC NR: AT5022299

SOURCE CODE: UR/3136/64/000/620/0001/0011

AUTHOR: Gurevich, I. I.; Makar'ina, L. A.; Nikol'skiy, B. A.; Sokolov, B. V.;  
Surkova, L. V.; Khakimov, S. Kh.; Shestakov, V. D.; Dobretsov, Yu. P.; Akhmanov, V. V. 26

ORG: [Gurevich, Makar'ina, Nikol'skiy, Sokolov, Surkova, Khakimov, Shestakov] IAE;  
[Dobretsov] MIFI; [Akhmanov] LYAP OIYaI

TITLE: Asymmetry of the angular distribution of electrons in the decay  $\pi^+ \rightarrow \mu^+ + e^+$   
in a magnetic field of 140,000 gauss 19

SOURCE: Moscow. Institut atomnoy energii. Doklady, IAE-620, 1964. Asimmetriya uglo-  
vogo raspredeleniya elektronov pi plus + mu plus + e plus raspada v magnitnom pole  
napryazhennost'yu 140 000 gauss, 1-11

TOPIC TAGS: mu meson, pi meson, positron, bubble chamber, radioactive decay

ABSTRACT: The universal V-A coupling theory applied to the determination of the an-  
gular distribution of electrons in the reaction  $\pi^+ \rightarrow \mu^+ + e^+$  is given by

$$\frac{dN}{d\theta} \sim 1 - \alpha \cos \theta_e$$

in terms of the parameter  $\alpha$ . In order to obtain a value of  $\alpha$  which depends on the  
polarization state of the meson, an experiment was performed showing the effect coun-  
tering the depolarization of the dense medium through which the meson is moving.

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L 10491-65 BNT(1)/EWA(1) P-1 63/MAR

ACCESSION NR: AT4047629

S/0000/64/009/000/0339/0376

AUTHOR: Solov'yeva, S. F.; Sigachev, I. I.; Surkova, N. A.; Kogteva, Ye. V.

TITLE: Relay-and-microswitch-type contacts for small-signal switching

SOURCE: Vsesoyuznoye soveshchaniye po elektricheskim kontaktam i

elektricheskiye kontakti • Electric  
Contact, 1964, 3, 4, 13-17

TOPIC TAGS: small signal switching, small signal contact, microswitch  
contact, relay contact

ABSTRACT: An investigation of the effect of films on contact surfaces is  
presented. Two types of contacts were studied: (1) Air-exposed contacts and  
(2) Sealed-in-plastic-container contacts. The "effect of long storage" was  
studied. The effect of a flow of  $H_2S$ , concentra-

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L 13441-85  
ACCESSION NR: AT4047629

their alloys with Ni, Zr, Rh, were tested as contact materials. "Methods of investigating the electrophysical characteristics of surface films formed on contact materials included measuring the resistance, by voltmeter and ammeter, of a circuit between the plate specimen and a sphere made from Pt+25% Ir. A hardness tester was used as a Pt-Ir hardness tester whose diamond indenter was replaced with the contact sphere. A contact pressure of 0.5-200 g was applied. Open-circuit voltage was 50 mv; current,  $10^{-6}$ - $10^{-4}$  amp. Data on the effect of contact pressure and contact area on the resistance and tables are reported. It was found that the Pt-Ir alloy was used as a contact material in a modern high-voltage switch. The best of them proved to be Au+16% Pd, Au+16% Pt, Au+16% Rh, Au+16% Zr deserve the attention of the designer. Of the Pt alloys, Pt+10% Rh can be recommended; however, the resistance of the Pt alloy is 4 times as high as that of Au+16% Pd in exposed-contact designs. The resistance of the Pt alloy on contacts in sealed designs was

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L 10491-65  
ACCESSION NR: AT4047629

studied by placing both the plastic and contact material in a sealed envelope and subjecting it to thermal aging. Plastics AG-4S at 175C, K-211-3 and RST at 150C, and teflon at 250C were aged for 178 hrs. Dark spots were discovered on the metal after the aging test; the spots were due to the metal surface sorption of the volatile substances produced by the plastic materials. The spots on some of the metals and alloys offered a contact resistance up to tens of megohms. Silver and Au + 1% Pt combined with any of the above plastics, showed a contact resistance up to 100 ohms. These metals are recommended for sealed contact applications. See 4 formulas, and 3 tables.

ASSOCIATION: none

SUBMITTED: 13J4164

ENCL: 00

SUB CODE: EC, DP

NO REF SOV: 005

OTHER: 002

Card 3/3

- SURKOVA, S.N., inzh.

Problem concerning the determination of wholesale prices of spare  
parts for electrical equipment. Vest. elektroprom. 34 no.1:  
57-60 Ja '63. (MIRA 16:1)

(Electric machinery)

SURKOVA, S.H., inzh.

Economic expediency of electric motor repairs. Energ. i elektrotekh.  
prom. no.2:63-65 Ap-Je '64. (MIRA 17:10)

SURKOVA, S.N., izh.

Improved planning for the repair costs of electrical machines.  
Energ. i elektrotekh. prom. no.2:64-66 Ap-Je '65.

(MIRA 18:8)

**"APPROVED FOR RELEASE: 08/26/2000**

**CIA-RDP86-00513R001653930007-7**

**APPROVED FOR RELEASE: 08/26/2000**

**CIA-RDP86-00513R001653930007-7"**

coals and also in geological prospecting.

SURKOVA, V. I.

✓ Chemical composition of coal and its changes during  
oxidation. V. I. Zabavin, N. P. Gordienko, L. A. Kle-  
menova, N. D. Russianova, V. I. Surkova, and M. Ya. (fuel 6)  
Sharyptina. Khim. i Tekhnol. Topliva 1956, No. 5, 23-  
31.—An analysis of various grades of Kuznetsk Basin coals  
from various geol. strata subjected to different degrees of  
natural erosion. A. P. Kotlov.

MASLENNIKOV, E.N.; PIKOVSKAYA, O.G., starshiy nauchnyy sotrudnik; SURKOVA, V.I., mladshiy nauchnyy sotrudnik; AGAFONOVA, L.L., mladshiy nauchnyy sotrudnik

Avivage preparations for polyvinyl alcohol fibers. Tekst.  
prom. 25 no.9:29-31 S '65. (MIRA 18:10)

1. Rukovoditel' gruppy tekstil'noy pererabotki Vsesoyuznogo nauchno-issledovatel'skogo instituta iskusstvennogo volokna (for Maslennikov). 2. Laboratoriya otdelki i krasheniya Vsesoyuznogo nauchno-issledovatel'skogo instituta iskusstvennogo volokna (for Pikovskaya, Agafonova). 3. Gruppya tekstil'noy pererabotki Vsesoyuznogo nauchno-issledovatel'skogo instituta iskusstvennogo volokna (for Surkova).

*Pa*  
Solution in heavy solvents as a method of evaluation and investigation of coals. A. I. Zolotarev and V. I. Surkova. *Bull. Acad. Sci. USSR Div. Chem. Sci.* 1968, 975-88 in Russian; cf. *Ch. I.* 36, 1162; 39, 2192. Coal dissolves to a large extent in anthracene oil (I) (fraction 350-380° from coal tar) and in retene (R) (from rosin, m. pt 101°), somewhat below 350°, at ordinary pressure; in this process the constituents of the coal undergo no chemical change. Various Donetsk-Basin

coals showed solubilities in I of 22-90%, in R of 4-20%; Kuznetsk Basin coals dissolved in I to the extent of 80-92%, in R to 48-51%; in all cases sol. in I is substantially higher, roughly twice as high as in R. Sol. of coal in pyridine is several times higher after treatment with either I or R; this indicates that sol. in I and R merely changes the colloidal structure of the constituents of the coal (depolymerization) so as to render them more readily sol. in lighter solvents such as pyridine. In this respect, I is more effective than R; e.g., sol. of a given coal in pyridine was raised from 17% to 65% and 80%, resp., after treatment with R and with I. The coking ability of a coal resides in the fraction sol. in the heavy solvent; the insol. residue does not coke but gives a powder; the latter fraction also contains practically all the ash. The yield in volatile matter from the I-dissolved fraction is equal to, or somewhat lower than, that of untreated samples; the yield from the residue is the same as, or lower than, that from the original coal. With R, the yield in volatile matter is 6-12% higher from the dissolved fraction than from the residue. The lower dissolving power of R as compared with I and the higher plasticity on coking of the R-dissolved fraction indicate that R is a more selective solvent toward coal than is I. The R-sol. part is richer in H. This distribution contrasts with

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the results of Erasmus on exts. with toluene at 300° of a coal of similar compn. and similar R-sol. With the object of detg. the nature of the difference in solvent behavior of I and R, samples of coal and of its fractions were subjected to oxidation. On exposure to air at 150-180°, for 100 hrs., the R-sol. fraction yields 1.7 times more H<sub>2</sub>O and 1.4 times more CO<sub>2</sub> than the insol. residue. The oxidation products contain C 70.54%, H 3.04%, ester methyl 4.40%, ether methyl 6.13%; for the R-sol. fraction and the insol. residue, the figures are 72.83, 3.70, 3.06, 3.93% and 73.23, 2.08, 3.28, 3.20%, resp.; thus all three substances are of the same chem. nature and differ only in colloidal condition. The same results were obtained in oxidation expts. with permanganate. I exts. from coal all its plastic constituents; this fraction is further split by R into a hydrobromic ext. and a huminic residue. N. Thon

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CIA-RDP86-00513R001653930007-7"

SURKOVA, V.L.

I-12

USSR/Chemical Technology - Chemical Products and Their  
Application. Treatment of solid mineral fuels

Abs Jour : Referat Zhur - Khimiya, No 4, 1957, 12838

Author : Zabavin V.I., Gordiyenko N.P., Kleymenova L.A.,  
Russianova N.D., Surkova V.L., Sharypkina M Ya.

Title : On Chemical Composition of Coal and Its Change on  
Oxidation

Orig Pub : Khimiya, i tekhnol. topliva, 1956, No 5, 23-31

Abstract : Presented are the results of exhaustive "hot" extraction  
(in which the sample is heated by solvent vapor) of coal  
of different grades from the new deposits of the Kuznetsk  
coal fields, unoxidized and of different degree of disin-  
tegration, with alcohol-benzene and with 5% solutions of  
KOH in alcohol-benzene removes from coal of grade D and  
G<sub>2</sub> 3-12% of extract, ~ 1% from coal of grade Zh, and >  
0.5% from coal of grades K-TS. Yield of extract from  
oxidized coal of grades G<sub>1</sub> and Zh<sub>2</sub> is higher than from

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JURKOVA, Ye.D.

Organization of climatotherapy in Uzbekistan sanatoriums.  
Sbor.trud.Uz.gos.nauch.-issl.inst.kur.i fizioter. 17:121-125  
'62. (MIRA 17:7)

L 10753-00 ENT(m)/ENP(w)/ENP(k)/T/ENP(t)/STI IJP(c) EM/JN/HN/JD  
ACC NR: AT6024920 (A) SOURCE CODE: UR/2981/66/000/004/0112/0119

AUTHOR: Kishkina, S. I.; Zilova, T. K.; Kadobnova, N. V.; Drozdovskiy, S. A.; Bubenshchikov, V. S.; Surkova, Yu. I.

ORG: none

TITLE: Stress-concentration and crack sensitivity of ATsM, ATsMU and AMg6 alloys and their welds

SOURCE: Alyuminiyevyye splayy, no. 4, 1966. Zharoprochnyye i vysokoprochnyye splayy (Heat-resistant and high-strength alloys), 112-119)

TOPIC TAGS: aluminum alloy, high strength alloy, stress concentration, notch sensitivity, metal property, / ATsM aluminum alloy, ATsMU aluminum alloy, AMg6M aluminum alloy, AMg6N aluminum alloy

ABSTRACT: Hot-rolled ATsM, ATsMU, AMg6M and AMg6N alloy plates 10 mm thick, ATsM and ATsMU alloy forgings, ATsMU and AMg6M alloy extruded shapes, and welds of these alloys have been tested for stress-concentration and crack sensitivity. The sensitivity to stress concentration was evaluated on the basis of tensile tests with notched specimens stressed under an angle of 4—8° to the axis. Crack sensitivity was tested with Mesnoger specimens having artificial cracks 1.5 mm deep. In all cases, specimens of ATsM and ATsMU alloys were tested after

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L 40953-66

ACC NR: AT6024920

aging at 90—100C for 100 hr. It was found that plates and extruded shapes of AMg6M alloy and their welds had low sensitivity to crack and stress concentration. The 20% strain-hardened AMg6N alloy plates were found to be crack and stress-concentration sensitive. The AMg6N alloy welds, however, had a low sensitivity to cracks and stress concentrations, identical to that of annealed plates and welds. Welds of high-strength ATsM alloy (tensile strength over 43 kg/mm<sup>2</sup>) were found to be stress-concentration and crack sensitive. The results of these tests led to the conclusion that AMg6N (strain-hardened AMg6) can be used in large welded structures. The ATsM alloy is less suitable for such structures because of high sensitivity to stress concentrations and cracks. Orig. art. has: 2 figures and 3 tables. [TD]

SUB CODE: 11, 13/ SUBM DATE: none/ ORIG REF: 002/ ATD PRESS: 5056

Card 2/2

hs

L 46958-66 EWP(k)/EWT(m)/T/EWP(w)/EWP(v)/EWP(t)/ETI IJP(c) JH/JD/EM  
 ACC NR: AT6024924 (A,N) SOURCE CODE: UR/2981/66/000/004/0152/0158

AUTHOR: Fridlyander, I. N.; Vlasova, T. A.; Skachkov, Yu. N.; Shiryayeva, N. V.;  
 Surkova, Yu. I.; Gorokhova, T. A.; Ped', A. A.; Gur'yev, I. I.; Dzyubenko, M. V.

ORG: none

TITLE: Weldability of high-strength alloys of the Al-Zn-Mg-Cu system

SOURCE: Alyuminiyevyye splavy, no. 4, 1966. Zharoprochnyye i vysokoprochnyye splavy  
 (Heat resistant and high-strength alloys), 152-158

TOPIC TAGS: aluminum zinc alloy, aluminum alloy property, weldability / V96 aluminum  
 zinc alloy

ABSTRACT: The object of the work was to study the weldability in the fusion welding  
 of V96 alloy, and also to determine whether the weldability of this alloy can be im-  
 proved by changing the chemical composition of the base metal and filler wire. Sheets  
 of V96 alloy 2.5 mm thick of the chemical composition 8.44% Zn, 2.72% Mg, 2.2% Cu,  
 0.06% Mn, 0.13% Zr, 0.29% Fe, and 0.13% Si were used in the experiments. In order to  
 decrease the tendency toward crystallization cracks, the welding should be carried out  
 with Al-Mg alloy fillers (of type AMg6). The content of the main alloying elements in  
 the base metal should be kept within the following limits: 6.5-7.5% Zn; 2.7-3.5% Mg;  
 1.6-2.0% Cu; 0.15-0.22% Zr. However, even then the tendency of V96-type alloys to  
 form cracks during welding remains higher than in commonly used alloys of the Al-Mg

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L 11-1-65

ACC NR: AT6024924

system (AMg3, AMg6). A considerable softening of the metal occurs in the heat-affected zone. The modulus of resistance of welded butt joints made by argon-arc welding is 0.5-0.6 of that of the base metal immediately after welding or after aging. Weld joints of V96-type alloys have a lower bending angle than those of other weldable aluminum alloys. The low plasticity of the joints may cause a low structural strength in welded structures. Orig. art. has: 4 tables.

SUB CODE: 11/ SUBM DATE: none/ ORIG REF: 002/ OTH REF: 001

Card 2/2

CIBIRAS, P., kand. med. nauk; DAKTARAVICIENE, E., kand. med. nauk;  
JARZEMSKAS, J., kand. med. nauk [deceased]; JOCEVICIENE, A.,  
kand. med. nauk; KRIKSTOFAITIS, M., kand. med. nauk; NENISKIS, J.,  
kand. med. nauk; STEPONAITIENE, L., kand. med. nauk; SURKUS, J.,  
kand. med. nauk; SIIMANAS, S., kand. biolog. nauk; CEPULIS, St.,  
prof.; KUPCINSKAS, J., prof.; LASAS, Vl., prof.; SIDERAVICIUS, Br.,  
prof.; KANOPKA, E., dots.; KVINKIS, V., dots.; LABANAUSKAS, K.,  
dots.; POLUKORDAS, H., dots.; BABUBLYS, P., doktor; CAPKEVICIUS, V.,  
doktor; MAKARIUNAS, P., doktor; PAKONAITIS, P., doktor; STUOKA, R.,  
doktor; SURGAILIS, H., doktor; PAULIUKONIENE, J., red.; ANAITIS, J.,  
tekh. red.

[Health and diseases] Antrasis patnisyta leidimas. Vilnius,  
Valstybine politines ir mokslines literaturos leidykla, 1961. 356 p.  
(MIRA 15:3)

(HYGIENE) (PATHOLOGY)

LAPYTE, A.; SURKUS, J., med. m. kand.

On the differential diagnosis of schizophrenia and mental disorders in rheumatism. Sveik. apsaug. 8 no.4:25-29 Ap'63.

1. Resp. Kauno psichoneurologine ligonine ir Kauno Valst. medicinos institutas.

\*

SURKUS, J., doc. med. m. kand.

The psychoneurological hospital of the Republic of Nauya-Vilna (on the 60th anniversary of its founding). Sveik. apsaug. 8 no.5:32-37 '63.

1. Kauno Valst. medicinos institutas.  
(HOSPITALS) (HOSPITALS, PSYCHIATRIC)  
(NEUROLOGY)

SURKUTE, R., red.; PAKERYTE, O., tekhn. red.

[Familiar faces] Pazistami veidai. Vilnius, Valstybine  
politines ir mokslines literaturos leidykla, 1962. 193 p.  
(MIRA 16:7)  
(Lithuania--Efficiency, Industrial)

1949, No. 7.

SHULIKOV, Ye. V. "The secondary suture and leukoplactic injury to the edges of wounds", Izv. S. M. gos. med. in-ta, Vol. II, 1949, p. 143-49.

31: U-4383, 17 August 53, (Izvestia 'nykh Statey', No. 22, 1949).

STRA, Henryk; PANIENIE, Maria

Apropos of the role of adrenals in therapy of women with post-inflammatory adnexal changes and sterility. Ginek. pol. 35 nr. 7. 227-237. Nr-Ap '84.

1. Z II Kliniki Ginekologii i Chorób Kobiet Akademii Medycznej w Gdańsku (Kierownik: Prof. dr. med. A. Gryniewicz).

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Effect of balneological therapy on the excretion of 17-ketosteroids, 17-hydroxycorticosteroids and total steroids in the urine of sexually mature women before and after surgical removal of ovaries. Ginek. Pol. 35 no.4:561-567 J1- Ag '64

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Excretion of metabolites of the adrenal cortex during treatment of adnexitis with glucocorticoids. Ginek. Pol. 36 no.9:999-1006 3 '65.

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D207/D308

AUTHOR: Surma, Marian

TITLE: Magnetic birefringence of liquid solutions. I. Magnetic birefringence of polar liquids and their solutions in carbon tetrachloride

SOURCE: Poznańskie Towarzystwo Przyjaciół Nauk. Komisja Matematyczno-Przyrodnicza. Prace. v. 11, no. 1, 1962, Fizyka dielektryków. no. 1, 113 - 128

TEXT: This paper was presented on October 19, 1961 at a meeting of the Komisja Matematyczno-Przyrodnicza PTPN (Mathematical and Scientific Committee, PTPN). The Cotton-Mouton magnetic birefringence constants,  $C$ , of nitrobenzene, m-nitrotoluene, o-nitrotoluene, o-nitroanisole, 1,2-dibromoethane and their solutions in carbon tetrachloride were measured at room temperature using light of  $\lambda = 547$  m $\mu$ . All these liquids were purified by distillation and (except  $CCl_4$ ) by filtering through  $Al_2O_3$ . The constants were deduced from the phase difference between the ordinary and extraordinary rays  
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